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Indian Standard

DIMENSIONS FOR MODEL I — CARTRIDGE CAMERA INTERFACE AND TAKE UP CORE DRIVE OF 8 mm TYPE S MOTION PICTURE CAMERA CARTRIDGE

UDC 778·533·4 : 006·78 : 771·531·352

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 2 *January* 1984

Indian Standard

DIMENSIONS FOR MODEL I — CARTRIDGE CAMERA INTERFACE AND TAKE UP CORE DRIVE OF 8 mm TYPE S MOTION PICTURE CAMERA CARTRIDGE

Cinematographic Equipment Sectional Committee, ETDC 47

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Indian Standard

DIMENSIONS FOR MODEL I — CARTRIDGE CAMERA INTERFACE AND TAKE UP CORE DRIVE OF 8 mm TYPE S MOTION PICTURE CAMERA CARTRIDGE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 November 1983, after the draft finalized by the Cinematographic Equipment Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 This standard lays down the dimensions of motion picture camera cartridge 8 mm type S, Model I and some critical dimensions of the take up core drive.

0.3 In preparing this standard, assistance has been derived from the Draft International Standard ISO/DIS 3654·2 'Cinematography — Motion picture camera cartridge, 8 mm type S, Model I — Cartridge camera interface and take up core drive — Dimensions and specifications', issued by the International Organization for Standardization.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the dimensions of the 8 mm Type S film camera cartridge, Model I cartridge-camera fit specifications.

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*Rules for rounding off numerical values (*revised*).

1.2 This standard also specifies the dimensions of the take-up core drive opening and some critical dimensions of the take-up core. In addition, the driving force, direction of drive and recommended drive ratio of the take-up core are also specified.

2. DIMENSIONS

2.1 The dimensions shall be as shown in the Fig. 1, 2 and 3, and given in the Tables 1 and 2.

2.2 The dimensions apply to a cartridge assembled with a film load at the time of manufacture.

2.3 Datum planes *B*, *C* and *A* are referred to as first, second and third datum planes respectively. These planes, which are used for dimensioning, are mutually perpendicular and jointly called a datum reference frame.

2.3.1 Datum plane *A* (*see* Fig. 2) is coincident with the centre of circle, located by basic dimension *T*. The circle is in contact with edges of the locating slot defined by dimensions *A*, *O*, *P* and *Q*. The diameter of this circle is such that it applies regardless of feature sizes (RFS) of the locating slot (*see* **A-3**).

2.4 Datum features *B*, *C* and *A* are primary, secondary, and tertiary respectively.

2.4.1 Datum feature *B* is the unnotched, unlabelled surface of the cartridge. It is the primary datum feature and relates the cartridge to the datum reference frame by having a minimum of three points in contact with the first datum plane B.

2.4.2 Datum feature *C* is the front seating surface of the cartridge. It is the secondary datum feature and relates the cartridge to the datum reference frame by having a minimum of two points in contact with the second datum plane *C*.

2.5 In Fig. 1, dimensions *L*, *N*, *U* and *V*, measured from datum planes *A* and *C* respectively, along with dimensions *W* and R_3, describe the extent of both triangular recessed areas having a depth controlled by dimension *E*, as shown in the view of the label side. The inboard wall of the recessed area, defined by dimensions *L* and *N*, shall be a straight plane.

2.6 The thickness of the wall of the cartridge used for notching, dimension *W*, shall be sufficient to withstand a force of at least 10 N, while deflecting no more than 1 mm.

NOTE — For the purpose of measurement, the force is applied by the end of a solid cylindrical pin of diameter nominally 1·27 mm applied at a point nominally 0·8 mm below the film speed notch or above the filter notch. The axis of the pin shall be situated within a plane parallel to datum plane *B* and at the distance *T*. Force is to be exerted in a direction away from and normal to datum plane *C*.

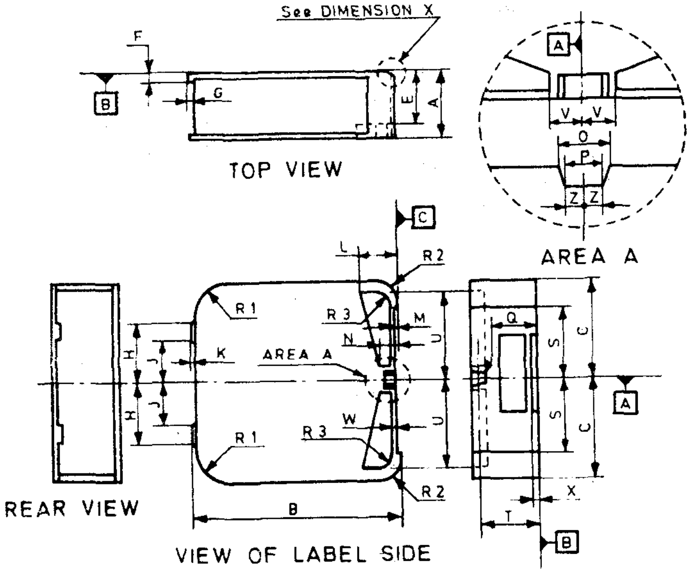

FIG. 1 EXTERNAL CARTRIDGE CAMERA FIT CHARACTERISTICS

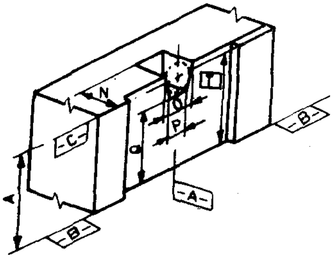

FIG. 2 CAMERA-LOCATING SLOT

2.7 Dimension *A* specifies the normal overall thickness of the cartridge.

2.8 The camera locating pin shall have a maximum diameter of 3·56 mm.

2.9 Dimensions *B* and *M* are measured from datum plane *C*. Dimensions *C*, *J*, *H* and *S* are measured from datum plane *A*.

2.10 The take-up core axis shall be located within 0·25 mm of the true centre formed by datum plane *A* and basic dimension *A* (*see* Fig. 3).

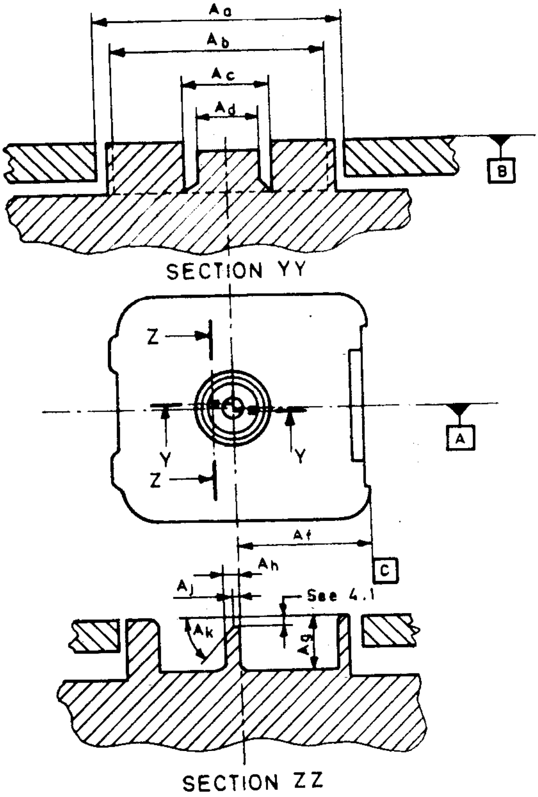

FIG. 3 TAKE-UP CORE DIMENSIONS

2.11 Dimensions A_a, A_b, A_c and A_d, in Fig. 3 are diameters.

3. TAKE-UP DRIVE

3.1 The nominal axial position of the highest point on the outer surface of the core shall not protrude more than ± 0·38 mm above datum plane *B* as shown in Fig. 3. The axial position of the top edge of the drive lugs established by dimensions A_b and A_c shall not be recessed more than 0·61 mm below datum plane *B*.

3.2 The normal direction of drive for the core shall be clockwise (right-hand drive) when viewed from the core side of the cartridge.

3.3 A nominal torque of $6{\cdot}0 \times 10^{-3}$ N.m with a permissible range of $3{\cdot}5 \times 10^{-3}$ N.m to $10{\cdot}6 \times 10^{-3}$ N.m from start of run is required to drive the core (*see* **A-2**).

NOTE 1 — Although two driving lugs are shown in the core and are recommended, only one is essential for satisfactory operation.

TABLE 1 DIMENSIONS OF CARTRIDGE CAMERA FIT AND CAMERA LOCATING SLOT

(*Clause* 2.1)

Dimension	mm
A	24·23 ± 0·25
B	75·9 ± 0·3
C	35·31 ± 0·25
E	19·81, *Max*
F	2·3 ± 0·3
G	1·5 ± 0·3
H	22·4 ± 0·8
J	15·5 ± 0·8
K	0·38 ± 0·25
L	11·94, *Min*
M	0·13 ± 0·08
N	4·50, *Min*
O	3·91 ± 0·10
P	3·61 ± 0·10
Q	19·56 ± 0·25
R_1	12·7 ± 2·5
R_2	6·4 ± 1·3
R_3	4·06, *Max*
S	25·9 ± 0·3
*T**	22·10
U	31·12, *Min*
V	3·18, *Max*
W	See 2·6
X	1·55, *Min*
Z	1·80 ± 0·05

*Basic dimension — No tolerance intended (*see* **2.3.1**).

TABLE 2 DIMENSIONS OF TAKE-UP CORE

(*Clause* 2.1)

DIMENSION	mm
A_a	17·27, *Max*
A_b	14·60, *Min*
A_c	8·31, *Max*
A_d	6·71, *Max*
A_f *	40·84
A_g	2·54 *Min,*
A_h	1·02 ± 0·13
A_j	0·51 *Max*
A_k	45° Nom

*Basic dimension. No tolerance intended (*see* **2.10**).

APPENDIX A

(*Clauses* 2.3.1 *and* 3.3)

RECOMMENDATIONS ON CORE DRIVE AND CAMERA LOCATING SLOT

A-1. In designinig the camera driver, consideration should be given to the fact that tooth-on-tooth engagement of the core lug on the camera driver pin is a possibility.

A-2. It is recommended that the core be tendency driven (by some form of slip-drive mechanism) with a drive ratio of at least one turn of the core for every 15 strokes of the pull-down claw.

A-3. To provide a consistent method of measurement, it is recommended that a cartridge gauging fixture be used which incorporates datum surfaces, a locating pin, and means of exerting locating forces on appropriate surfaces of the cartridge.